QUALITY CONTROL REPORTS FOR

WET MIX MACADAM(WMM)

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/Gradation/2014-15

07.07.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager,** KRIDL, Bangalore.

Name of Work : Improvements of Roads (UGD Laying Roads) and Drains in Sandyagappa Reddy Layout, Mariyannapalya in Ward No.07 Byatarayanapura, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/ /2014-15 Dated: 06.06.2014

Date of Testing : 07.07.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **25500**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	995	995	3.9	96.1	95-100
22.4	6230	7225	28.3	71.7	60-80
11.2	5360	12585	49.4	50.6	40-60
4.75	4285	16870	66.2	33.8	25-40
2.36	3590	20460	80.2	19.8	15-30
0.600	2370	22830	89.5	10.5	8-22
0.075	2385	25215	98.9	1.1	0-8

Note:

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M/s. Civil-Tech Consultants & Engineers
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JAS-ANZ BSCIC ISO 9001 REGISTERED

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07.07.2014

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Reference : AEE/(KOD.SUB.DIV)/ /2014-15 Dated: 06.06.2014

Date of Testing : 07.07.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **25600**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	900	900	3.5	96.5	95-100
22.4	6270	7170	28.0	72.0	60-80
11.2	5480	12650	49.4	50.6	40-60
4.75	4310	16960	66.3	33.8	25-40
2.36	3730	20690	80.8	19.2	15-30
0.600	2355	23045	90.0	10.0	8-22
0.075	2270	25315	98.9	1.1	0-8

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07.07.2014

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Reference : AEE/(KOD.SUB.DIV)/ /2014-15 Dated: 06.06.2014

Date of Testing : 07.07.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **26385**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	820	820	3.1	96.9	95-100
22.4	6680	7500	28.4	71.6	60-80
11.2	4890	12390	47.0	53.0	40-60
4.75	3675	16065	60.9	39.1	25-40
2.36	3525	19590	74.2	25.8	15-30
0.600	4155	23745	90.0	10.0	8-22
0.075	2160	25905	98.2	1.8	0-8

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Reference : AEE/(KOD.SUB.DIV)/ /2014-15 Dated: 06.06.2014

Date of Testing : 07.07.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **26865**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	815	815	3.0	97.0	95-100
22.4	6500	7315	27.2	72.8	60-80
11.2	4795	12110	45.1	54.9	40-60
4.75	4250	16360	60.9	39.1	25-40
2.36	3535	19895	74.1	25.9	15-30
0.600	4235	24130	89.8	10.2	8-22
0.075	2175	26305	97.9	2.1	0-8

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Date of Testing : 07.07.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **26865**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	950	950	3.5	96.5	95-100
22.4	7930	8880	33.1	66.9	60-80
11.2	5275	14155	52.7	47.3	40-60
4.75	5150	19305	71.9	28.1	25-40
2.36	2565	21870	81.4	18.6	15-30
0.600	2280	24150	89.9	10.1	8-22
0.075	2365	26515	98.7	1.3	0-8

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Date of Testing : 07.07.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **27280**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	95	95	0.3	99.7	95-100
22.4	6450	6545	24.0	76.0	60-80
11.2	4890	11435	41.9	58.1	40-60
4.75	5285	16720	61.3	38.7	25-40
2.36	3840	20560	75.4	24.6	15-30
0.600	4160	24720	90.6	9.4	8-22
0.075	2240	26960	98.8	1.2	0-8

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Date of Testing : 07.07.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **21120**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	695	695	3.3	96.7	95-100
22.4	6580	7275	34.4	65.6	60-80
11.2	1955	9230	43.7	56.3	40-60
4.75	3880	13110	62.1	37.9	25-40
2.36	3105	16215	76.8	23.2	15-30
0.600	2540	18755	88.8	11.2	8-22
0.075	1885	20640	97.7	2.3	0-8

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Reference : AEE/(KOD.SUB.DIV)/ /2014-15 Dated: 06.06.2014

Date of Testing : 07.07.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **24425**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	350	350	1.4	98.6	95-100
22.4	5840	6190	25.3	74.7	60-80
11.2	5290	11480	47.0	53.0	40-60
4.75	4285	15765	64.5	35.5	25-40
2.36	3650	19415	79.5	20.5	15-30
0.600	2410	21825	89.4	10.6	8-22
0.075	2310	24135	98.8	1.2	0-8

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Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **27345**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	350	350	1.3	98.7	95-100
22.4	6850	7200	26.3	73.7	60-80
11.2	5980	13180	48.2	51.8	40-60
4.75	3595	16775	61.3	38.7	25-40
2.36	3615	20390	74.6	25.4	15-30
0.600	4250	24640	90.1	9.9	8-22
0.075	2105	26745	97.8	2.2	0-8

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Date of Testing : 07.07.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **27795**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	800	800	2.9	97.1	95-100
22.4	6290	7090	25.5	74.5	60-80
11.2	5295	12385	44.6	55.4	40-60
4.75	4585	16970	61.1	38.9	25-40
2.36	3450	20420	73.5	26.5	15-30
0.600	4310	24730	89.0	11.0	8-22
0.075	2505	27235	98.0	2.0	0-8

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Date of Testing : 07.07.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **26975**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	965	965	3.6	96.4	95-100
22.4	7850	8815	32.7	67.3	60-80
11.2	5260	14075	52.2	47.8	40-60
4.75	5185	19260	71.4	28.6	25-40
2.36	2590	21850	81.0	19.0	15-30
0.600	2305	24155	89.5	10.5	8-22
0.075	2515	26670	98.9	1.1	0-8

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Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): 27578

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	98	98	0.4	99.6	95-100
22.4	6285	6383	23.1	76.9	60-80
11.2	5450	11833	42.9	57.1	40-60
4.75	5025	16858	61.1	38.9	25-40
2.36	3950	20808	75.5	24.5	15-30
0.600	4085	24893	90.3	9.7	8-22
0.075	2305	27198	98.6	1.4	0-8

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/Gradation/2014-15

07.07.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager,** KRIDL, Bangalore.

Name of Work : Improvements of Roads (UGD Laying Roads) and Drains in Sandyagappa Reddy Layout, Mariyannapalya in Ward No.07 Byatarayanapura, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/ /2014-15 Dated: 06.06.2014

Date of Testing : 07.07.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **22505**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	680	680	3.0	97.0	95-100
22.4	7980	8660	38.5	61.5	60-80
11.2	1960	10620	47.2	52.8	40-60
4.75	3865	14485	64.4	35.6	25-40
2.36	3115	17600	78.2	21.8	15-30
0.600	2535	20135	89.5	10.5	8-22
0.075	1890	22025	97.9	2.1	0-8

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08.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of the Work	Improvements of Roads (UGD Laying Roads) and Drains in Sandyagappa Reddy Layout, Mariyannapalya in Ward No.07 Byatarayanapura, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/ /2014-15 Dated: 06.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	08.07.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	379	380	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	79	78	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	302	
4	Aggregate Impact value = percent fines	20.84	20.53	
	100* (W_2/W_1)%			20.69

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Reference	AEE/(KOD.SUB.DIV)/ /2014-15 Dated: 06.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	08.07.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	387	388	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	86	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	301	
4	Aggregate Impact value = percent fines	22.22	22.42	
	100* (W_2/W_1)%			22.32

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Reference	AEE/(KOD.SUB.DIV)/ /2014-15 Dated: 06.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	08.07.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	389	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	80	81	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	305	308	
4	Aggregate Impact value = percent fines	20.78	20.82	
	100* (W_2/W_1)%			20.80

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Reference	AEE/(KOD.SUB.DIV)/ /2014-15 Dated: 06.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	08.07.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	392	395	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	90	89	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	302	306	
4	Aggregate Impact value = percent fines	22.96	22.53	
	100* (W_2/W_1)%			22.75

Comments:

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Aggregate Impact Value

IS: 2386 Part IV

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Reference	AEE/(KOD.SUB.DIV)/ /2014-15 Dated: 06.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	08.07.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	387	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	84	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	303	303	
4	Aggregate Impact value = percent fines	21.30	21.71	
	100* (W_2/W_1)%			**21.50**

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Reference	AEE/(KOD.SUB.DIV)/ /2014-15 Dated: 06.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	08.07.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	386	388	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	82	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	306	
4	Aggregate Impact value = percent fines	22.02	21.13	
	100* (W_2/W_1)%			21.58

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/S-T/2014-15 08.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of Work	Improvements of Roads (UGD Laying Roads) and Drains in Sandyagappa Reddy Layout, Mariyannapalya in Ward No.07 Byatarayanapura, BBMP,
Reference	AEE/(KOD.SUB.DIV)/ /2014-15 Dated: 06.06.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	08.07.2014

Result : Flakiness Index = **11.85%**

Elongation Index = **13.25%**

Civil-Tech Consultants & Engineers Bangalore

Result : Combined Flakiness & Elongation index 25.10%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

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Reference	AEE/(KOD.SUB.DIV)/ /2014-15 Dated: 06.06.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	08.07.2014

Civil-Tech Consultants & Engineers Bangalore

Result : Flakiness Index = **12.35%**

Elongation Index = **13.85%**

Result : Combined Flakiness & Elongation index **26.20%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

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Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	08.07.2014

Civil-Tech Consultants & Engineers Bangalore

Result : Flakiness Index = **11.89%**

Elongation Index = **13.25%**

Result : Combined Flakiness & Elongation index **25.14%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	08.07.2014

Civil-Tech Consultants & Engineers Bangalore

Result : Flakiness Index = **12.35%**

Elongation Index = **13.95%**

Result : Combined Flakiness & Elongation index **26.30%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	08.07.2014

Civil-Tech Consultants & Engineers Bangalore

Result : Flakiness Index = **11.10%**

Elongation Index = **13.29%**

Result : Combined Flakiness & Elongation index **24.39%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	08.07.2014

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Result : Flakiness Index = **12.35%**

Elongation Index = **13.85%**

Result : Combined Flakiness & Elongation index **26.20%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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